PROGRESS REPORT

FOR

PERIOD OF JUNE 1, 1964 TO JUNE 30, 1964

CONTRACT NUMBER AF33(600)40280

BY

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AEROSPACE DIVISION

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A F-101 FLIGHT TEST

Five system flights were flown during June. The first, flight 110, was made at sub-sonic speed and various altitudes to isolate the cause of video striping still evident on the primary film. Even with much testing and analysis, the cause was not determined during June.

Prior to flight 111, a parametric pre-amplifier was installed. Noise figure measured 5.2 db, approximately 1.2 db improvement over the tunnel diode amplifier. No data was obtained on the next three flights because of an aircraft SIF (identification equipment) failure, wing tank fuel transfer problems, and antenna pressure seal failure. Only two minutes of data were obtained on flight 114, because of further fuel problems, but it was sufficient time to observe imaging caused by the parametric pre-amp.

The range boost for the video amplifier was installed for flight 114, but was not evaluated because of the shortened flight. The range boost will be tested when flights resume.

Recorder 006 and transmitter 001 were flight tested this month, prior to delivery to the Phase II testing area.

Following flight 114, the aircraft 300 hour periodic inspection was begun, with two months down time expected. To date 112 system test flights have been flown, averaging 4.7 flights per month.

B PHASE II FLIGHT TEST

Several tests were performed on system 002 in the Phase II testing area.

The recorder film speed inverter frequency was checked for various ground speeds from the INS. Tracking of inverter frequency

with ground speed was satisfactory. Changes were made in the Nav Tie-In unit to facilitate the tests.

Operation of the doppler frequency tracker was improved through retuning and adjusting.

The transmitted pulse was noisy and jittery; some arcing occurred in the transmitter. Investigation will continue in July.

Recorder 007 was received, allowing recorder 005 to be returned to Itek for modification.

Minor changes were made in the Range Mark Selector. Actuation time for the aircraft recorder when operated with the radar was changed to be every ten seconds. The ferrite attenuator was calibrated.

A review of the film evaluator by both Itek and Westinghouse personnel resulted in some recommended changes. Two lenses were ordered to replace the two adjacent to the test target film. As an interim fix, the two existing lenses were reversed to provide better spherical aberration correction.

Corner reflectors have been shipped to the testing area and arrangements made for their installation. Fabrication of spherical reflectors has started.

In addition to recorder 007 and the corner reflectors, major items sent to the testing area were:

(1) CFA transmitter test set (item 22 of Exhibit B, Section 1)

(2) Transmitter components, including 2 pulse forming networks, 1 set of servo boards, CX300 electronic tube.

(3) fixed and variable chassis of the frequency generator

(4) control box for system testing in the laboratory

(5) lifting eyebolts for the frame.

The antenna actuator used in laboratory tests at Westinghouse was returned to its supplier for modification of the position feedback transducer and repair.

C RECORDER

Modifications were completed at Itek on recorder 006. After delivery to Westinghouse, the cathode ray tube was replaced. This recorder was flown in the F-101 prior to shipment as part of system 003.

Some components have delayed the delivery of the final Utronics power supply. An additional high voltage power supply was ordered from Utronics for spares.

D ANTENNA

Efforts to bond the I8 fabric to the array sticks on a module basis have resulted in continued failure. The major problem is the appearance of many bubbles between the fabric and stick during the final cure. Westinghouse Research Labs suggested an additional pre-cure and baking the fabric before spraying.

Two lots of 8 sticks were bonded under various conditions. Prebaking of the fabric and another pre-cure step were shown to be required. The test module is now being prepared for bonding by this revised process. If successful, the six modules of antenna 003 will be reworked similarly.